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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,253	10/27/2003	YiRen Hong	1229.006	4327

37421 7590 11/08/2007

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EXAMINER	
MULLINS, BURTON S	
ART UNIT	**PAPER NUMBER**
2834	

MAIL DATE	DELIVERY MODE
11/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,253	HONG ET AL.	
	Examiner	Art Unit	
	Burton S. Mullins	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 21 Aug 2007

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6,7,9,11,12,14,15,17,19 and 21-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6,7,9,11,12,14,15,17,19 and 21-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 7, 9, 15, 17 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunfield et al. (US 5,694,268) in view of Nitta et al. (US 5,604,389).

Dunfield teaches a spindle motor comprising: a rotatable component 36 defining a bearing gap and relatively rotatable with a stationary component 34; a base plate 12 affixed to the stationary component; a stator 38, affixed to the stationary component, for generating an electromagnetic force that interacts with a magnet 70 affixed to the rotatable component and drives the rotatable component, wherein the stator 72 and the base plate 12 define a separation there between (not numbered, Fig.2), and wherein the stator 38 is situated radially outside the magnet 70 (Fig.2); a motor seal (flux shield) 82/292 situated radially outside the magnet and positioned axially above the stator (Figs.2&11; the flux shield is a "seal" in the sense that it covers the top of the stator); and a bonding substance 209 (overmold comprising rubber/plastic material, c.8:12-19; Figs.8-11) formed substantially about the stator, substantially filling the separation and uniting the base plate 266, the motor seal 292 and the stator (Fig.11).

Dunfield does not teach that the base plate axial thickness is minimized (i.e., reduced) adjacent the separation by "a recess defined within a radially extending portion of the base plate, and.wherein a portion of the stator is positioned within the recess."

Nitta teaches a disk drive spindle motor including a stator core 1, stator coils 2 wrapped around stator poles 15, and a rotor 5 (Figs.4-8). The stator core 1 is fitted to a base plate 4 with openings (recesses)13b, such that the lower part of each coil 2 is inserted into the corresponding opening 13 (c.4:41-45; Fig.8). In the words of claim 1, Nitta teaches a recess 13 defined within a radially extending portion of the base plate 4, and.wherein a portion 2 of the stator 1 is positioned within the recess 13. The recesses help to lower the position of the core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18).

It would have been obvious to modify Dunfield and 'minimize' the base plate axial thickness adjacent the separation with "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess" per Nitta to reduce the thickness of the motor.

Regarding claims 7 and 15, Nitta's recess 13 "further comprises an opening defined through the base plate [4]". In the combination, the openings/recesses would be "substantially filled with the bonding substance" 209 of Dunfield, wherein "the bonding substance [209] forms a contiguous base plate" since the bonding substance would fill the openings/recesses to fully encapsulate the stator coils recessed therein and bond with the base plate.

Regarding claim 9, both Dunfield's and Nitta's motor are spindle motors for a disk drive (see abstracts). Further, note data storage disc 16 in Dunfield attached to the rotatable component (c.4:32-35).

Regarding claims 23-24, Nitta teaches a portion of the base plate 4 adjacent to the separation (between the baseplate 4 and stator 1) defines an opening 13 that is substantially filled with the bonding substance of Dunfield, the bonding substance forming a contiguous base plate, and wherein a portion of the stator in Nitta is positioned below an adjacent surface of the base plate (Nitta, Fig.8), the base plate having a varied axial thickness (the opening 13 defines a 'variation' in the axial thickness of the base plate 4 in Nitta).

Regarding method claims 17, 22 and 25, the method is taught by Dunfield and Nitta since all the claimed elements are taught and since assembly of the motor comprising these elements would necessarily require the recited steps.

4. Claims 1, 3, 7, 9, 11, 15, 17, 19 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lieu et al. (US 6,844,636) in view of Nitta et al. (US 5,604,389). Lieu teaches a spindle motor comprising: a rotatable component 100 defining a bearing gap (with bearings 107) and relatively rotatable with a stationary component (shaft) 106 (Fig.14); a base plate 105 affixed to the stationary component; a stator 104 affixed to the stationary component, for generating an electromagnetic force that interacts with a magnet 103 affixed to the rotatable component 100 and drives the rotatable component, wherein the stator 104 and the base plate 105 define a separation there between (Fig.14), and wherein the stator is situated radially outside the magnet (Fig.14); a motor seal (comprising thermoplastic portion 116 on top of stator coil 111; Fig.14) situated radially outside the magnet and positioned axially above the stator 104 (Fig.14); and a bonding substance (thermoplastic) 116, formed substantially about the stator 104, substantially filling the separation and uniting the base plate 105, the motor seal 116 and the stator 104.

Lieu does not teach that the base plate axial thickness is minimized (i.e., reduced) adjacent the separation by "a recess defined within a radially extending portion of the base plate, and.wherein a portion of the stator is positioned within the recess."

Nitta teaches a disk drive spindle motor including a stator core 1, stator coils 2 wrapped around stator poles 15, and a rotor 5 (Figs.4-8). The stator core 1 is fitted to a base plate 4 with openings 13b, such that the lower part of each coil 2 is inserted into the corresponding opening 13 (c.4:41-45; Fig.8). In the words of claim 1, Nitta teaches a recess 13 defined within a radially extending portion of the base plate 4, and.wherein a portion 2 of the stator 1 is positioned within the recess 13. The recesses help to lower the position of the core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18).

It would have been obvious to modify Lieu and 'minimize' the base plate axial thickness adjacent the separation with "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess" per Nitta to reduce the thickness of the motor.

Regarding claims 3 and 11, in Lieu the bonding thermoplastic 116 is a generic form of thermally conductive epoxy.

Regarding claims 7 and 15, Nitta's recess 13 "further comprises an opening defined through the base plate [4]". In the combination, the openings/recesses would be "substantially filled with the bonding substance" 116 of Lieu, wherein "the bonding substance forms a contiguous base plate" since the bonding substance would fill the openings/recesses to encapsulate the stator coils recessed therein and bond with the base plate, i.e. the two parts are in contact or integrated (Lieu, Fig.14).

Regarding claim 9, Lieu's motor is a spindle motor for a disk drive (c.1:17-29), as is Nitta's motor (abstract).

Regarding claims 23-24, Nitta teaches a portion of the base plate 4 adjacent to the separation (between the baseplate 4 and stator 1) defines an opening 13 that is substantially filled with the bonding substance of Lieu, the bonding substance forming a contiguous base plate, and wherein a portion of the stator in Nitta is positioned below an adjacent surface of the base plate (Nitta, Fig.8), the base plate having a varied axial thickness (the opening 13 defines a 'variation' in the axial thickness of the base plate 4 in Nitta).

Regarding method claims 17, 19, 22 and 25, the steps are inherent since all the elements are disclosed by Lieu and Nitta and the recited steps would necessarily be required to assemble the motor.

5. Claims 1, 7, 9, 15, 17 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacLeod et al. (US 6,282,053) in view of Nitta et al. (US 5,604,389). MacLeod teaches a spindle motor comprising: a rotatable component 40/42 defining a bearing gap (with bearings 24) and relatively rotatable with a stationary component (shaft) 20 (Fig.2); a base plate 100 affixed to the stationary component; a stator 80 affixed to the stationary component, for generating an electromagnetic force that interacts with a magnet 46 affixed to the rotatable component 40/42 and drives the rotatable component, wherein the stator 80 and the base plate 100 define a separation there between (not numbered, Fig.7), and wherein the stator 80 is situated radially outside the magnet 46 (Fig.2); a motor seal (comprising overmold) 92 situated radially outside the magnet 46 and positioned axially above the stator 80 (Fig.7); and a bonding substance (plastic overmold) 92, formed substantially about the stator 80 (c.5:28-48; Figs.4-

5&7), substantially filling the separation and uniting the base plate 100, the motor seal 92 and the stator 80.

However, MacLeod does not teach that the base plate 100 axial thickness is minimized (i.e., reduced) adjacent the separation by "a recess defined within a radially extending portion of the base plate, and.wherein a portion of the stator is positioned within the recess."

Nitta teaches a disk drive spindle motor including a stator core 1, stator coils 2 wrapped around stator poles 15, and a rotor 5 (Figs.4-8). The stator core 1 is fitted to a base plate 4 with openings 13b, such that the lower part of each coil 2 is inserted into the corresponding opening 13 (c.4:41-45; Fig.8). In the words of claim 1, Nitta teaches a recess 13 defined within a radially extending portion of the base plate 4, and.wherein a portion 2 of the stator 1 is positioned within the recess 13. The recesses help to lower the position of the core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18).

It would have been obvious to modify MacLeod and 'minimize' the base plate axial thickness adjacent the separation with "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess" per Nitta to reduce the thickness of the motor.

Regarding claims 7 and 15, Nitta's recess 13 "further comprises an opening defined through the base plate [4]". In the combination, the openings/recesses would be "substantially filled with the bonding substance" 92 of MacLeod, wherein "the bonding substance forms a contiguous base plate" since the bonding substance would fill the openings/recesses to overmold the stator coils recessed therein and bond with the base plate, i.e. the two parts are in contact or integrated (MacLeod, Fig.7).

Regarding claims 23-24, Nitta teaches a portion of the base plate 4 adjacent to the separation (between the baseplate 4 and stator 1) defines an opening 13 that is substantially filled with the bonding substance 92 of MacLeod, the bonding substance forming a contiguous base plate, and wherein a portion of the stator in Nitta is positioned below an adjacent surface of the base plate 4 (Nitta, Fig.8), the base plate having a varied axial thickness (the opening 13 defines a 'variation' in the axial thickness of the base plate 4 in Nitta).

Regarding method claims 17, 22 and 25, the steps are inherent since all the elements are disclosed by the combination and the recited steps would necessarily be required to assemble the motor.

6. Claims 6, 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Dunfield, Lieu or MacLeod, further in view of Nitta. The specific thickness of the base plate in each of these references is not disclosed as in the range of 0.1 to 0.3 mm; however, determining the range of thickness would have been a matter of obvious engineering design.

7. Claims 3-4, 11-12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one combination of Dunfield and Nitta or MacLeod and Nitta, further in view of Nakamura (US 5,490,319). Neither Dunfield, MacLeod or Nitta teach a thermally conductive epoxy, per se (claims 3, 11 & 19).

Nakamura teaches a thermally conductive epoxy composition 6 used to encapsulate stators where high electrical insulation and heat conducting properties are desired.

It would have been obvious to employ a thermally conductive epoxy per Nakamura to encapsulate the motors of Dunfield or MacLeod, further in view of Nitta so as to provide electrical insulation and heat conduction.

Regarding claims 4 and 12, use of specific known materials would have been obvious as a matter of engineering design.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Regarding the feature of a recess/opening in the base plate, Yamaguchi teaches a concave portion 1c in motor base 1 which receives armature coils to reduce motor thickness and Utsumi teaches recesses 20 in the stator base 11 which receive motor coils (Fig.1). Kuwert teaches an elastic mass coating the stator windings.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm or by e-mail at burton.mullins@uspto.gov. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
07 November 2007